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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/816,879

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EXAMINER

WALKER, KEITH D

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

12/19/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/816,879	Applicant(s) HORIUCHI ET AL.	
	Examiner KEITH WALKER	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/3/08</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/1/08 has been entered.

Response to Amendment

Claims 1-6 are pending examination as discussed below.

Information Disclosure Statement

The information disclosure statement filed on 11/3/08 has been placed in the application file and some of the information referred to therein has been considered as to the merits. The Japanese Office Action dated October 7, 2008 has not been considered since an English translation of the document was not provided. Applicant can submit an English translation and the document will be considered at that time.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 1-6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Regarding claim 1, the new limitation "with a completely unobstructed predetermined space between them and said space extends from a lower position to an upper position" is not supported by the instant specification. Applicant appears to rely on the figures for support of the new limitation and as shown in figures 3 & 4, the lower position of the space is obstructed with the fuel supplying device. As such the new limitation is not supported by the instant specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP Publication 08-050914 (Iwazawa) in view of JP Publication 06-196176 (Niikura).

Iwazawa teaches a fuel cell device comprising at least two fuel cells that are arranged such that the anode layer of the first fuel cell faces the anode of the second fuel cell with a predetermined space in between (Fig. 4; [0031-0035]). The space is open at both ends of the fuel cell and the space located on either side of the

interconnector is a completely unobstructed predetermined space. The fuel cell has a fuel supply unit supplying gaseous fuel to the anode electrode (Fig. 3, [0024-0026]).

Iwazawa is silent to a flame formed in the space between the anodes or flat shaped fuel cells.

Niikura teaches using a flame for the fuel cells to raise and keep the temperature of the fuel cell at an operational temperature (Abstract, [0019]). The fuel cell has either a tubular or flat plate shape, as is well known in the art and is also taught by Niikura (Figs 1 & 2). The anode layer is directly exposed to the flame and the cathode is isolated from the flame but exposed to air (Fig. 5; [0019]). This system teaches using a fuel and a flame as the supply means to the anode to consolidate the act of heating the fuel cell with the act of supplying the anode with fuel for the operation of the fuel cell. The motivation for using the flames is to heat up the fuel cell so an outside power is not needed to warm up the fuel cell ([0011]).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the fuel cell supply unit with the flame-producing unit of Niikura to eliminate the need for extra heating units and to improve safety ([0021,0022]). Furthermore, combining the fuel supplying apparatus with the heating apparatus reduces the number of components required for the operation of the fuel cell system.

Iwazawa is silent to the use of a liquid fuel for the fuel cell.

The use of liquid fuels such as methanol and ethanol are well known in the art. It would have been obvious to one having ordinary skill in the art at the time of the

invention was made to use a liquid fuel instead of a gaseous fuel, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice (MPEP 2144.07). Combining prior art elements according to known methods to yield predictable results and using known techniques to improve similar devices in the same way are considered obvious to one of ordinary skill in the art (KSR, MPEP 2141 (III)).

3. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP Publication 08-050914 (Iwazawa) in view of JP Publication 06-196176 (Niikura) as applied to claim 1 and further in view of JP Publication 06-196172 (Okuyama).

The teachings of Iwazawa and Niikura as discussed above are incorporated herein.

Iwazawa and Niikura are silent to the anode comprising nickel oxide and lithium.

Okuyama teaches a solid oxide fuel cell using an anode made of nickel oxide and lithium (Abstract, [0009-0017]). The nickel oxide and lithium anode decreases the voltage drop in the fuel cell by decreasing the internal resistance of the fuel cell ([0006-0008]).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the anode of Iwazawa with the anode of Okuyama to increase the fuel cell performance by decreasing the internal resistance and the voltage drop of the fuel cell.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP Publication 08-050914 (Iwazawa) in view of JP Publication 06-196176 (Niikura) as applied to claim 1 and further in view of US Patent 5,114,803 (Ishihara).

The teachings of Iwazawa and Niikura as discussed above are incorporated herein.

Iwazawa and Niikura are silent to using a liquid fuel.

Ishihara teaches a solid oxide fuel cell that can use any number of fuels such as natural gas, methanol, coal reformed gas and heavy oil (Abstract, 1:5-20).

Iwazawa and Niikura disclose the claimed invention except that gaseous fuel is used instead of a liquid fuel. Ishihara teaches that liquid fuel is an equivalent structure known in the art. Therefore, because these two types of fuel were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute the liquid fuel for the gaseous fuel.

Response to Arguments

Applicant's arguments filed 11/3/08 have been fully considered but they are not persuasive.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Applicant's deconstruction of the combination of references and teachings to

provide a piecemeal comparison to the claims is not a proper showing or persuasive showing of nonobviousness.

Applicant argues since a nickel felt interconnector is within the space between the anodes, this space is not completely unobstructed. However, as discussed above, the space on either side of the interconnector equates to a predetermined space that is completely unobstructed.

Applicant alleges the flame of Nikura “may ignite the nickel felt or otherwise cause high temperatures leading to an instability in the electrochemical process” of Iwazawa. Applicant provides no evidence or reasoning to support this allegation and therefore amounts to unsubstantiated opinion. Solid oxide fuel cells operate at temperatures around 1000° C, so it would be obvious to one skilled in the art that the interconnector would be able to withstand the flame. As such, no difficulties or instabilities exist with the combination of the two references.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. As noted in the interview summary of 10/24/08, JP 01-298647 is relevant to applicant's disclosure and so is cited for applicant's record.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEITH WALKER whose telephone number is (571)272-3458. The examiner can normally be reached on Mon. - Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Keith Walker/
Examiner, Art Unit 1795